Atoms and Elements ~ Museum Explorations 2006-2007
Bradbury Science Museum ~ Los Alamos National Laboratory
edu-bsm@lanl.gov

New Mexico Science Content Standards, Benchmarks, and Performance Standards

Strands and Benchmarks

Kindergarten – 4th Grade

Strand I: **Scientific Thinking and Practice**

Strand II: Content of Science
Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.

K-4 Benchmark I: Recognize that matter has different forms and properties.

Grade	**Performance Standards**
K	Observe that objects are made of different types of materials (e.g., metal, plastic, cloth, wood).
	Observe that different materials have different properties (e.g., color, odor).
1	Describe simple properties of matter (e.g., hardness, flexibility, transparency).
3	Identify and compare properties of pure substances and mixtures (e.g., sugar, fruit juice).
4	Know that changes to matter may be chemical or physical and when two or more substances are combined, a new substance may be formed with properties that are different from those of the original substances (e.g., white glue and borax, cornstarch and water, vinegar and baking soda).
	Know that materials are made up of small particles (atoms and molecules) that are too small to see with the naked eye. Know that the mass of the same amount of material remains constant whether it is together, in parts, or in a different state.

5th – 8th Grade

Strand II: Content of Science
Standard I (Physical Science): Understand the structure and properties of matter, the characteristics of energy, and the interactions between matter and energy.

5-8 Benchmark I: Know the forms and properties of matter and how matter interacts.

GradePerformance Standards
5 Know that matter is made up of particles (atoms) that can combine to form molecules and that these particles are too small to see with the naked eye.
Know that the periodic table is a chart of the pure elements that make up all matter.
6 Understand that substances have characteristic properties and identify the properties of various substances
Know that there are about 100 known elements that combine to produce compounds in living organisms and nonliving substances.
Know the differences between chemical and physical properties and how these properties can influence the interactions of matter.
7 Describe how substances react chemically in characteristic ways to form new substances (compounds) with different properties (e.g., carbon and oxygen combine to form carbon dioxide in respiration).
Know that chemical reactions are essential to life processes.
8 **Properties of Matter**
Understand the differences among elements, compounds, and mixtures by:
- classification of materials as elements, compounds, or mixtures
- interpretation of chemical formulas

Structure of Matter
Explain that elements are organized in the periodic table according to their properties.
Know that compounds are made of two or more elements, but not all sets of elements can combine to form compounds.

Changes in Matter
Know that phase changes are physical changes that can be reversed (e.g., evaporation, condensation, melting).
Describe various familiar physical and chemical changes that occur naturally (e.g., snow melting, photosynthesis, rusting, burning).
Know that chemical reactions can absorb energy (endothermic reactions) or release energy (exothermic reactions).